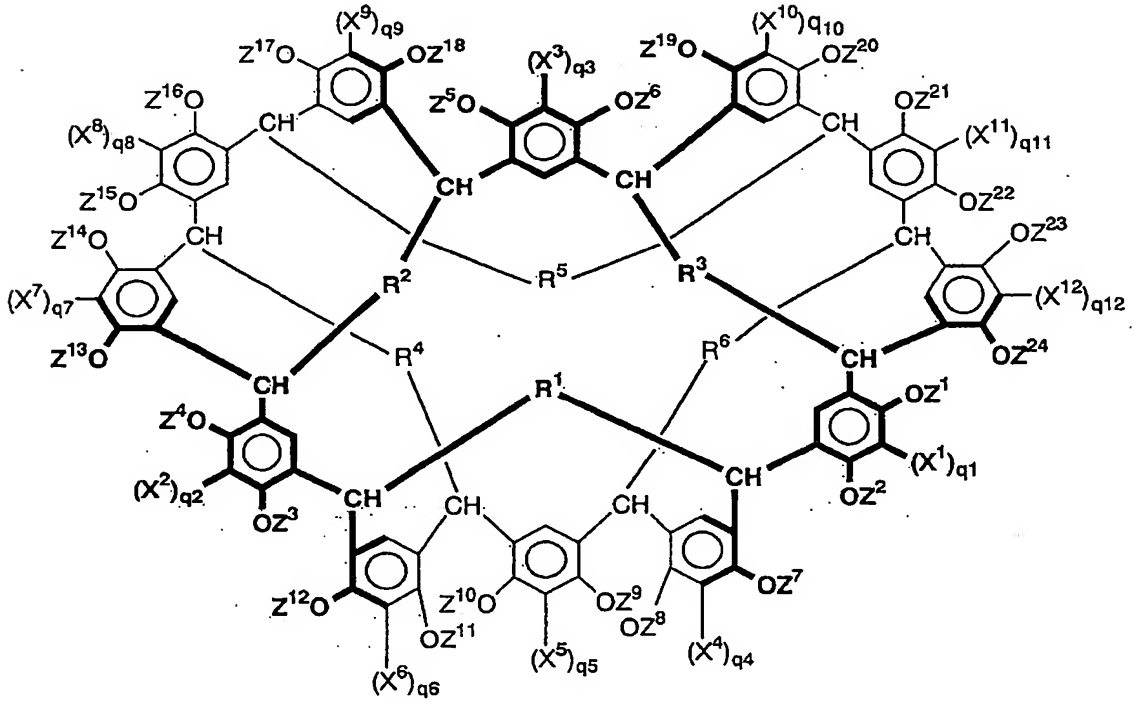
CLAIMS

1. A calixarene compound shown by following formula (1):

[Formula 1]



(1)

wherein R^1 to R^6 individually represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^1 to X^{12} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group

having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; Z^1 to Z^{24} individually represent a hydrogen atom, a group having a polymerizable functional group, a group having an alkali-soluble group, or a substituted alkyl group having an alkyl chain with a 1 to 8 carbon atom content, or two adjacent Zs in combination represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; q^1 to q^{12} individually represent an integer of 0 or 1.

2. The calixarene compound according to claim 1 , wherein X^1 to X^{12} in the formula (1) are methyl groups.

3. The calixarene compound according to claim 1 , wherein q^1 to q^{12} in the formula (1) are 0.

4. The calixarene compound according to any one of claims 1 to 3, wherein R^1 to R^6 are individually an alkylene group having 3, 5, 7, or 8 carbon atoms.

5. The calixarene compound according to any one of claims 1 to 4, wherein all of the Z^1 to Z^{24} groups in the formula (1) are hydrogen atoms.

6. The calixarene compound according to any one of claims 1 to 4, wherein at least one of the Z^1 to Z^{24} groups in the formula

(1) is a group other than hydrogen atom.

7. The calixarene compound according to claim 6, wherein at least one of the Z^1 to Z^{24} groups in the formula (1) has a polymerizable functional group.

8. The calixarene compound according to claim 7, wherein the polymerizable functional group is a polymerizable unsaturated group and/or a cyclic ether group.

9. The calixarene compound according to any one of claims 6 to 8, wherein at least one of the Z^1 to Z^{24} groups in the formula (1) has an alkali-soluble group.

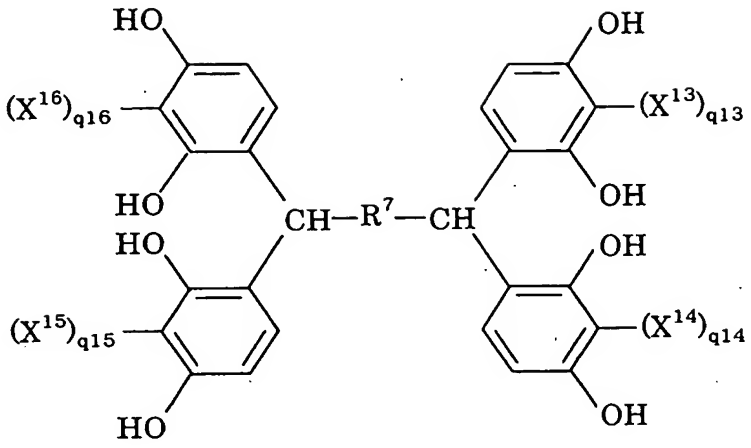
10. The calixarene derivative according to claim 9, wherein the alkali-soluble group is at least one group selected from the group consisting of a carboxyl group, amino group, sulfonamide group, sulfonic acid group, and phosphoric acid group.

11. The calixarene derivative according to any one of claims 6 to 10, wherein at least one of the groups among Z^1 to Z^{24} in the formula (1) has both a polymerizable functional group and an alkali-soluble group.

12. At least one intermediate of a calixarene compound selected from the group shown by the following formulas (2),

to (8):

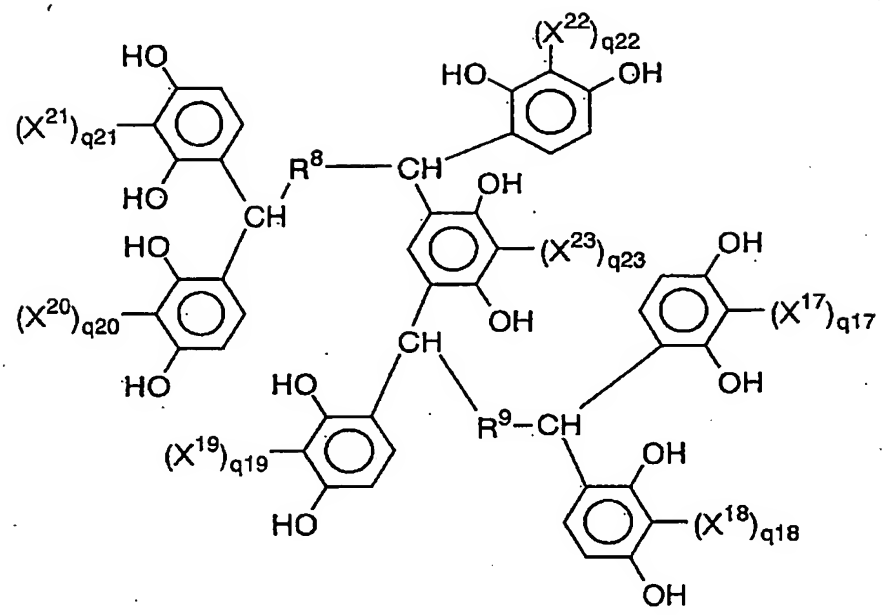
[Formula 2]



(2)

wherein R^7 represents a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{13} to X^{16} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{13} to q^{16} individually represent an integer of 0 or 1,

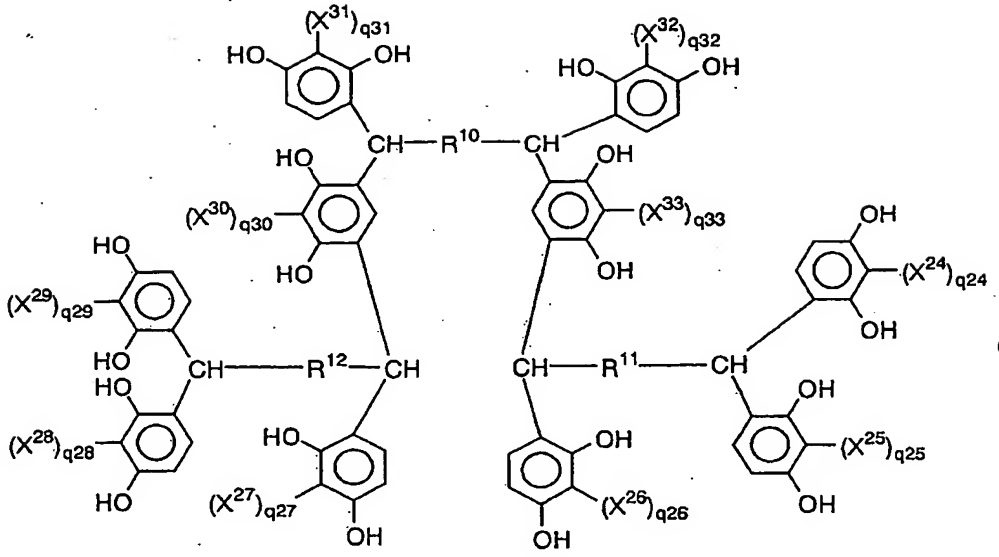
[Formula 3]



(3)

wherein R^8 and R^9 individually represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{17} to X^{23} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{17} to q^{23} individually represent an integer of 0 or 1,

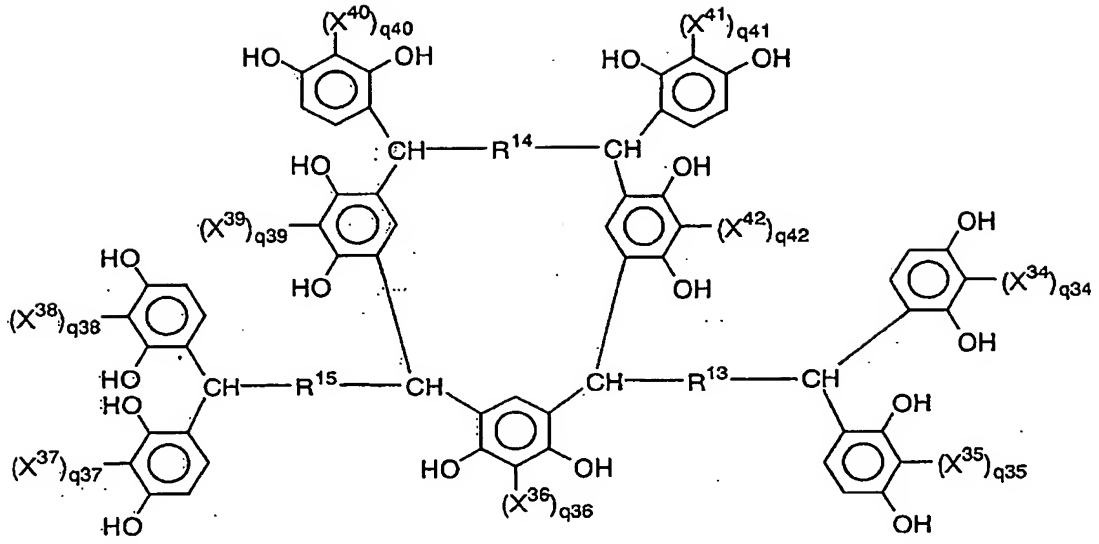
[Formula 4]



(4)

wherein R^{10} to R^{12} individually represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{24} to X^{33} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; q^{24} to q^{33} individually represent an integer of 0 or 1,

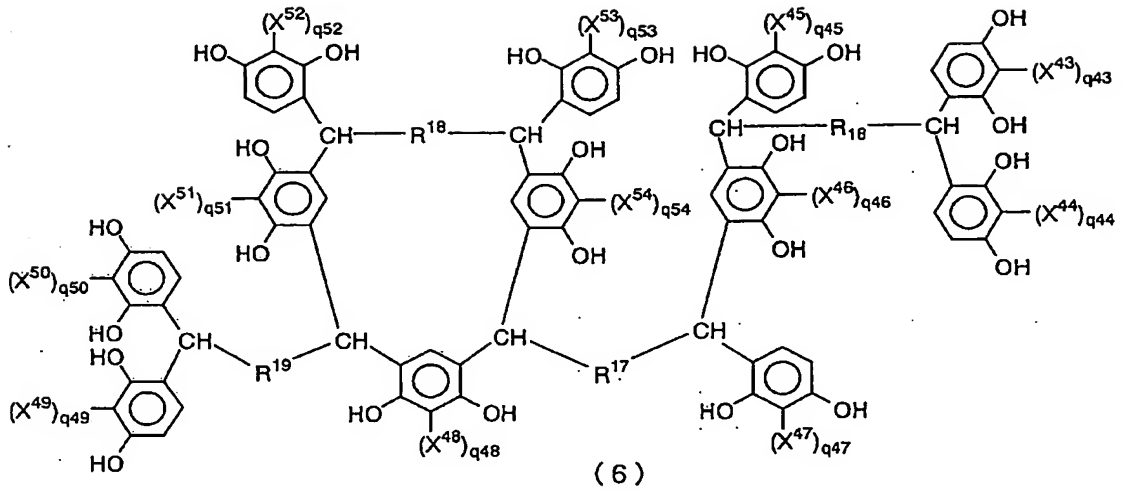
[Formula 5]



(5)

wherein R^{13} to R^{15} individually represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{34} to X^{42} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{34} to q^{42} individually represent an integer of 0 or 1,

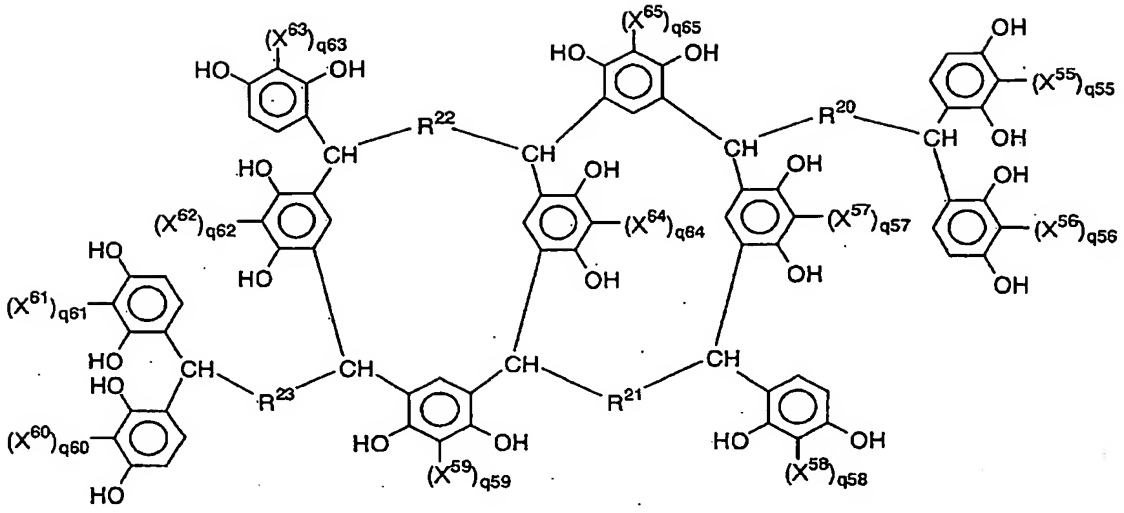
[Formula 6]



(6)

wherein R^{16} to R^{19} represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{43} to X^{54} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{43} to q^{54} individually represent an integer of 0 or 1,

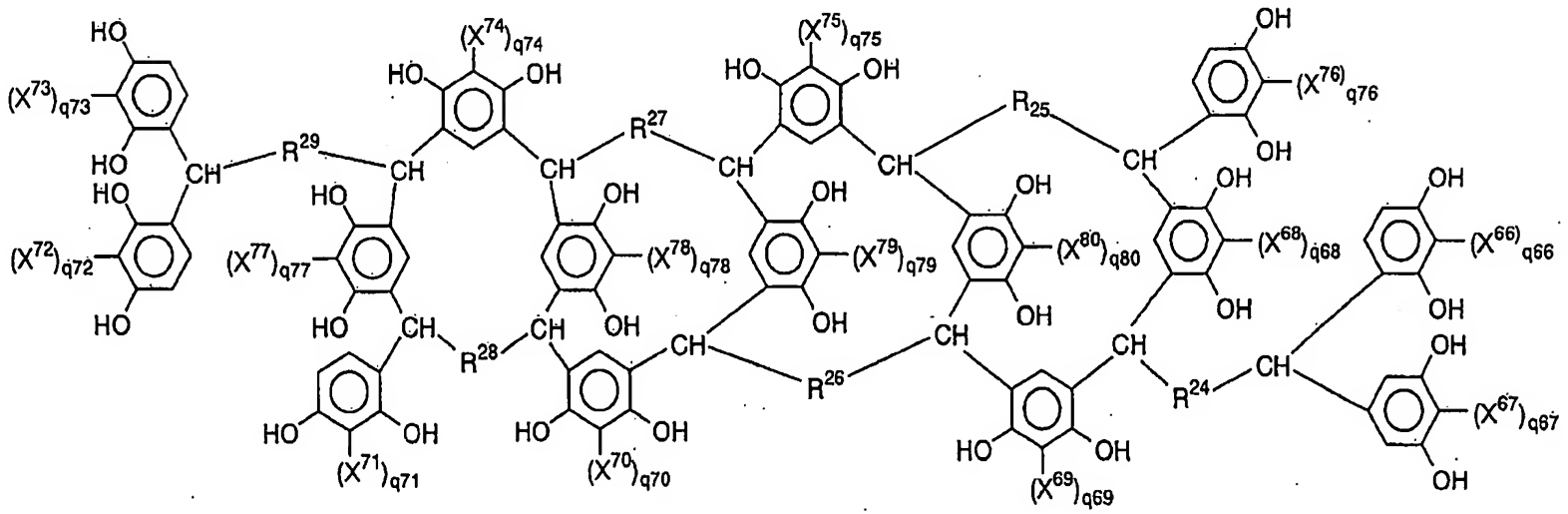
[Formula 7]



(7)

wherein R^{20} to R^{23} represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; X^{55} to X^{65} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{55} to q^{65} individually represent an integer of 0 or 1,

[Formula 8]



(8)

wherein R^{24} to R^{29} represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms;; X^{66} to X^{80} individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{66} to q^{80} individually represent an integer of 0 or 1.

13. The intermediate of a calixarene compound according to claim 12, wherein X^{13} to X^{80} in the formulas (2) to (8) are methyl groups.

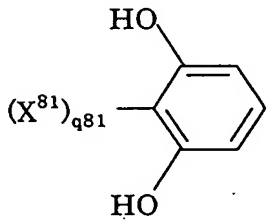
14. The intermediate of a calixarene compound according to claim 12, wherein q^{13} to q^{80} in the formulas (2) to (8) are 0.

15. The intermediate of a calixarene compound according to any one of claims 12 to 14, wherein R^{7} to R^{29} in the formulas (2) to (8) are individually an alkylene group having 3, 5, 7, or 8 carbon atoms.

16. A method for manufacturing a calixarene compound comprising condensing at least one compound shown by the

formula (9) and at least one compound shown by the formula (10):

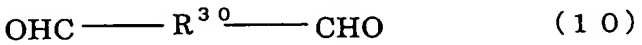
[Formula 9]



(9)

wherein X^{81} represents a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; and q^{81} is an integer of 0 or 1,

[Formula 10]



(10)

wherein R^{30} represents a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms.

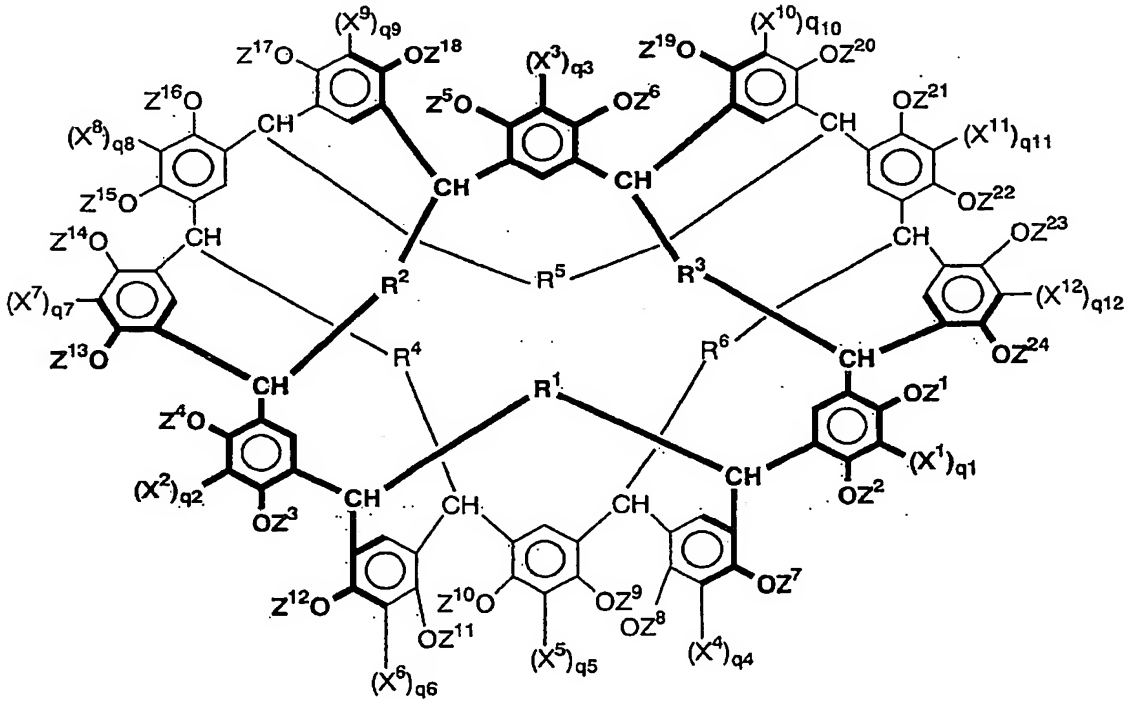
17. The method according to claim 16, wherein X^{81} in the formula (9) is a methyl group.

18. The method according to claim 16, wherein q^{81} in the formula (9) is 0.

19. The method according to any one of claims 16 to 18, wherein R^{30} in the formula (10) is an alkylene group having 3, 5, 7, or 8 carbon atoms.

20. A composition comprising a calixarene compound of the formula (1) and a solvent which can dissolve the calixarene compound:

[Formula 11]



(1)

wherein R^1 to R^6 individually represent a substituted or unsubstituted alkylene group having 1-8 carbon atoms; X^1 to X^{12}

individually represent a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted alkenyl group having 2 to 10 carbon atoms, a substituted or unsubstituted alkynyl group having 2 to 10 carbon atoms, a substituted or unsubstituted aralkyl group having 7 to 10 carbon atoms, a substituted or unsubstituted alkoxyl group having 1 to 10 carbon atoms, or a substituted or unsubstituted phenoxy group; Z^1 to Z^{24} individually represent a hydrogen atom, a group having a polymerizable functional group, a group having an alkali-soluble group, or a substituted alkyl group having an alkyl chain with a 1 to 8 carbon atom content, or two adjacent Zs in combination represent a substituted or unsubstituted alkylene group having 1 to 8 carbon atoms; q^1 to q^{12} individually represent an integer of 0 or 1.

21. The composition according to claim 20, wherein the calixarene compound has a polymerizable functional group for at least one of the Z^1 to Z^{24} groups in the formula (1) and the composition further comprises a polymerization initiator.

22. The composition according to claim 20, wherein the calixarene compound has an alkali-soluble group for at least one of the Z^1 to Z^{24} groups in the formula (1).